



Policy & Procedure (P&P)

Policy Title :

Reading and Grading Agglutination

Department	Index No.	Scope
Laboratory & Blood Bank	LAB-066	All Blood Bank staff
Issue Date	Revision NO	Effective Date
1432/06/04	3	1440/08/20
Review Due Date	Related Standard NO.	Page Number#
1442/08/20	CBAHI (LB. 50)	6

01. Policy:

The grading of agglutination reactions should be standardized among Blood Bank Staff.

02. Definition :

N/A

03. Purpose :

The grading of agglutination reactions allows for comparison of reaction strengths. This is also beneficial in detecting multiple antibodies.

04. Procedure :

TUBE METHOD

1. Gently shake or tilt the tube and disrupt the red cell button in the tube.
2. Observe the way that cells are dispersed from the red cell button.
3. Avoid over shaking as this may break up large agglutinates or disperse weakly cohesive agglutinates.
4. Record reactivity by comparing the agglutinates to the descriptions in the table below. The reactivity should be assessed when the red cells have been completely resuspended.

5. Interpretation

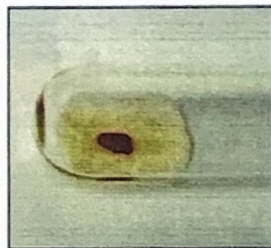
Refer table below:

- 5.1. Serum overlying the centrifuged cell button must be inspected for hemolysis, which is a positive sign of an antigen-antibody reaction, provided the pretest serum was not hemolyzed.
- 5.2. The character of the agglutination should be noted and recorded. Loose, mixed-field, or refractive

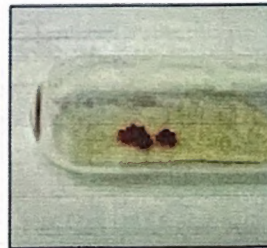
agglutinates should be noted.

5.3. Mixed field agglutination can occur in:

- 5.3.1. Post transfusion red cell samples
- 5.3.2. Certain antibody specificities e.g. some Lutheran system antibodies
- 5.3.3. When using pooled cells for antibody detection
- 5.3.4. Adding check cells to negative antiglobulin tests



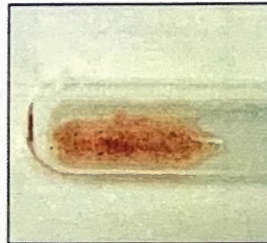
4+ Reaction



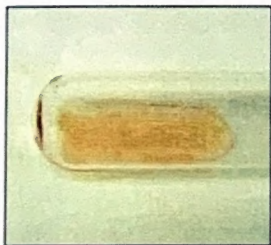
3+ Reaction



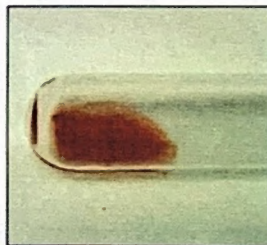
2+ Reaction



1+ Reaction



Hemolysis



Negative reaction

Macroscopically Observed Findings	Designation
One solid agglutinate	4+
Several large agglutinates	3+
Medium-size agglutinates, clear background	2+
Small agglutinates, turbid background	1+
Very small agglutinates, turbid background	1 ^w
Barely visible agglutination, turbid background	1/2 or trace
No agglutination	0
Mixtures of agglutinated and agglutinated RBCs (mixed field)	Mf
Complete hemolysis	H
Partial hemolysis, some RBCs remain	PH

6. Limitations

Variability in reaction grading can be due to:

- 6.1. Volume of antibody and antigen
- 6.2. Age of cells used in testing
- 6.3. Centrifugation time
- 6.4. Incubation time
- 6.5. Type of optical aid used to observe agglutination
- 6.6. Individual method of resuspending cells
- 6.7. Personal interpretation of the standard of agglutination against which results are compared
- 6.8. Physical condition of technologist attentiveness, fatigue, distraction, etc.

GEL METHOD

Principle of Gel Technology

- Large agglutinates remain on or near the top of gel interface
- Smaller agglutinates pass through gel, depending on size
- Unpaginated cells pass to base of microtube to form a button
- Cells are always added prior to serum so that serum does not come into contact with gel
- Grading of reaction depends on the distribution of RBCS throughout the column

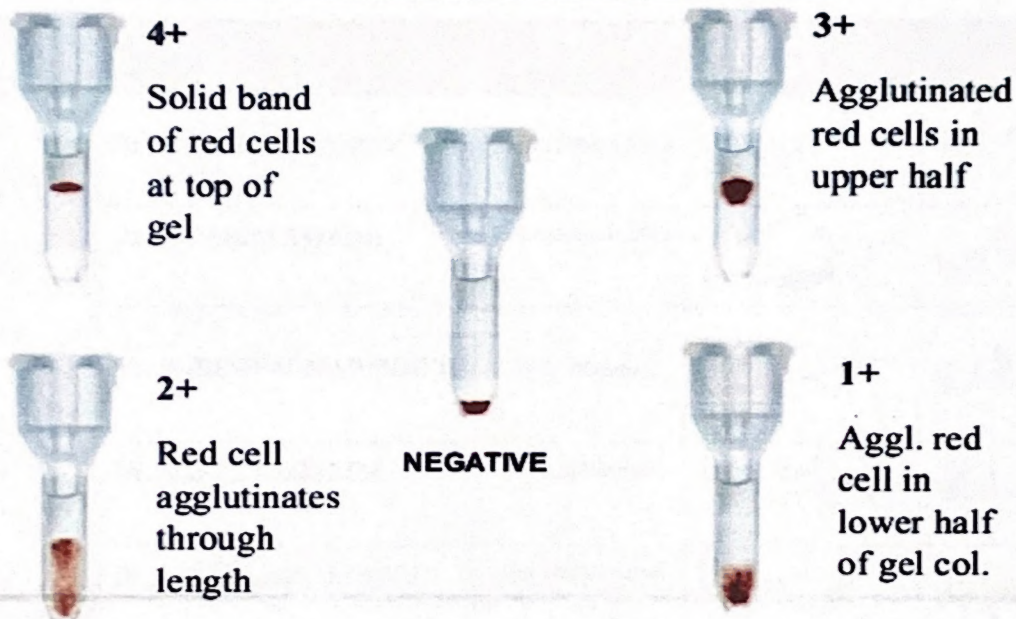
Limitations

- ID-Cards which show air bubbles or gel drops in the upper part of the microtubes and/or the seal, must be centrifuged before use.
- Bacterial or other contamination of materials used can cause false positive or false negative results.
- Fibrin residues in the red cell suspension may trap non-agglutinated cells presenting a fine pink line on top of the gel while most of the cells are on the bottom of the microtube after centrifugation.
- Strict adherence to the procedures and recommended equipment is essential. The equipment should be checked regularly according to GLP procedures.
- Use of suspension solutions other than ID-Diluent 2 may modify the reactions.
- Too heavy or too weak red cell suspensions can cause aberrant results.

Grading of reaction

- 4+ solid band of red cells on top of gel
- 3+ agglutinated cells on upper half
- 2+ red cell agglutination through the length of column
- 1+ agglutinated cells on lower half

INTERPRETATION OF GEL TEST



05. Responsibilities :

All laboratory & Blood Bank staff of Al-Qunfudah General Hospital.

06. Equipment & Forms

N/A



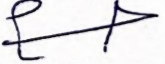
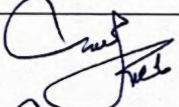
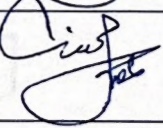
07. Attachment :

N/A

08. Reference

The Technical manual of the American Association of Blood Banks.

Preparation , Reviewing & Approval Box

	NAME	POSITION	SIGN & STAMP	DATE
Prepared By	Dr RAJA NACER SASSI	Head of Blood Bank		16/8/1440
Reviewed By	Dr. IBRAHIM AWADH	Lab & B.Bank HOD		16/8/1440
Document Reviewed By	Ms. SADIAH ALMAHMOUDI	TQM Director		18/8/1440
Reviewed By	Dr. AGEEL ALGANIMI	Medical Director		18/8/1440
Approved By	Dr. ABDULLAH ALJABRI	Hospital Director		18/8/1440

